

RED KNOT (*Calidris canutus rufa*) MONITORING AT  
CAPE LOOKOUT NATIONAL SEASHORE

2016 SUMMARY REPORT



A flagged Red Knot GF (CPM) and Sanderling Foraging in the Intertidal Zone on North Core Banks.  
NPS Photo 2015

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## **Introduction**

Serious declines in the population of red knots (*Calidrus canutus rufa*) led the U.S. Fish and Wildlife Service (USFWS) to provide protection under the Endangered Species Act. In December 2014, the red knot was designated as a threatened species (USFWS, 2014). Red knots use the Outer Banks of North Carolina as a stopover site in spring and fall migration. While not as important as some other coastal sites, the Outer Banks may still contribute to the survival of this species.

Previous monitoring of red knots at Cape Lookout National Seashore (CALO) was limited to surveys as part of a broader shorebird study in 1992 and 1993. North Core Banks had greater numbers of red knots than anywhere else in the Outer Banks (Dinsmore et al, 1998) but surveys in that study did not include any of the areas south of New Drum Inlet.

This report contains a summary of monitoring results for 2016 and comparisons to results from the earlier study and discussion of long-term monitoring of red knots at CALO.

## **Methods**

Surveys for red knots were made of the entire ocean beach and inlet areas on North Core Banks (NCB) and South Core Banks (SCB) beginning in mid-March. The area between Old Drum Inlet and Ophelia Inlet was not monitored in 2016.

Our survey frequency and timing followed the International Shorebird Census guidelines for spring and fall. Counts were done near the 5<sup>th</sup>, 15<sup>th</sup>, and 25<sup>th</sup> of the month from March 15<sup>th</sup> to June 5<sup>th</sup> and from July 15<sup>th</sup> to October 15<sup>th</sup>.

Surveys were conducted by the park biologist or biological science technicians who have experience identifying shorebirds. Surveys were at different times of day, tides and weather conditions. Monitors recorded the number of red knots observed, the mile location, the latitude and longitude, the amount of human disturbance, tide level, and the accuracy of the count (See Appendix 1).

## **Results**

Most of the red knots counted during our surveys were found on NCB with an average of 330 birds per count. SCB averaged 34 birds per count. NCB had the highest count of 2,124 birds on May 15. SCB highest count of 161 birds was on May 25. The peak numbers for the core banks were during spring migration with 2,236 birds counted during the May 15 census. The spring migration from 15 March to 5 June averaged 706 birds. There was also a small peak in early August of fall migrants (Figure 1). The fall migration from 15 July to 25 October averaged 54 birds. Red knots were distributed over the length of the core banks (Figures 2 & 3)

## Discussion

Our monitoring confirmed the importance of the seashore as a stopover site for red knots, particularly during spring migration. The relative abundance of red knots on North Core Banks during peak spring migration was 71 birds/ kilometer compared to 34 birds/ kilometer in 1992-1993, Table 1 (Dinsmore et al, 1998). This is the third highest relative abundance recorded. Relative abundance has fluctuated for this migratory species from a low of 14 in 2009 to a high of 89 in 2014. Peak counts during spring migration ranged from April 25 to May 25. NCB has averaged more birds overall and had the highest peak counts. Monitoring data from 2006 to 2016 reveals the highest counts consistently occurred from Ocracoke Inlet to mile 7 on NCB and from Ophelia Inlet to mile 28 on SCB. Figure 4 illustrates the counts by mile section for the last 11 years of monitoring and Appendix 2 contains this data. Although the Outer Banks may not be as important as some other sites in the region such as Delaware Bay, the area still provides habitat that may be important for the recovery and long-term survival of red knots.

Table 1. Red knot Relative Abundance on North Core Banks, 1992-2016.

Year	Date	Peak Count	Kilometers	Relative Abundance
1992-1993			34	34
2006	5-May	618	30.3	20
2007	15-May	718	30.6	23
2008	15-Apr	1287	30.6	42
2009	25-May	525	36	14
2010	15-May	927	36	26
2011	15-May	648*	36	18
2012	25-April	1370	29.8	46
2013	25-May	854	29.8	29
2014	15-May	2666	29.8	89
2015	15-May	2201	29.8	74
2016	15-May	2124	29.8	71

\*The year 2011 peak count was corrected from previous reports.

## Literature Cited

Dinsmore, S.J., J.A. Collazo, and J.R. Walters. 1998. Seasonal numbers and distribution of shorebirds on North Carolina's Outer Banks. *Wilson Bulletin* 110:171-182.

U.S. Fish and Wildlife Service. 2014. Determination of Threatened and Endangered status of the Rufa Red Knot. *Federal Register* Vol.79 No.238:73706-73748.

Figure 1. Number of Red Knots Counted at Cape Lookout National Seashore in 2016.

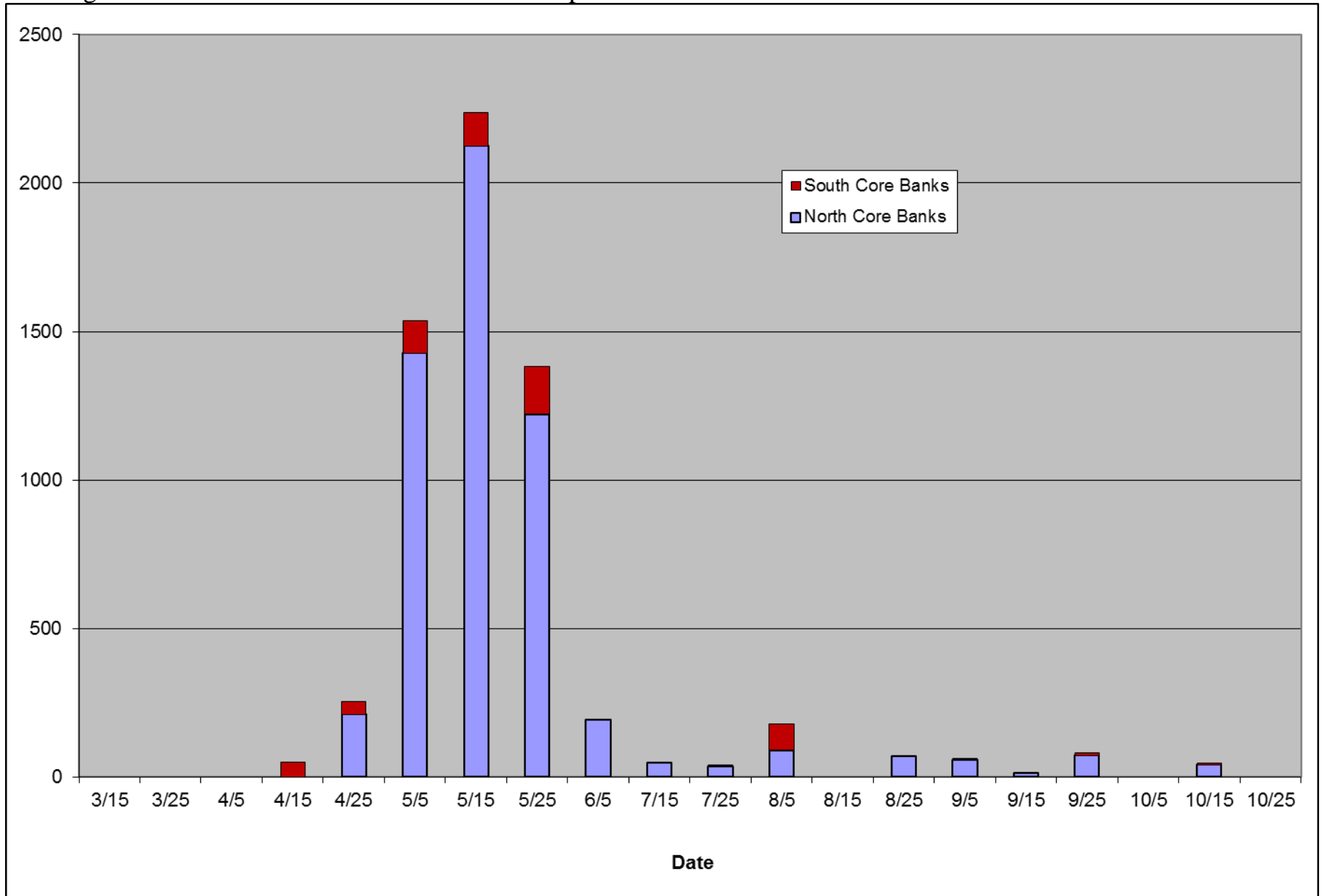


Figure 2. Geographic Distribution of Red Knots Counted on North Core Banks with Total Counts per Mile Section (# 519) in 2016.

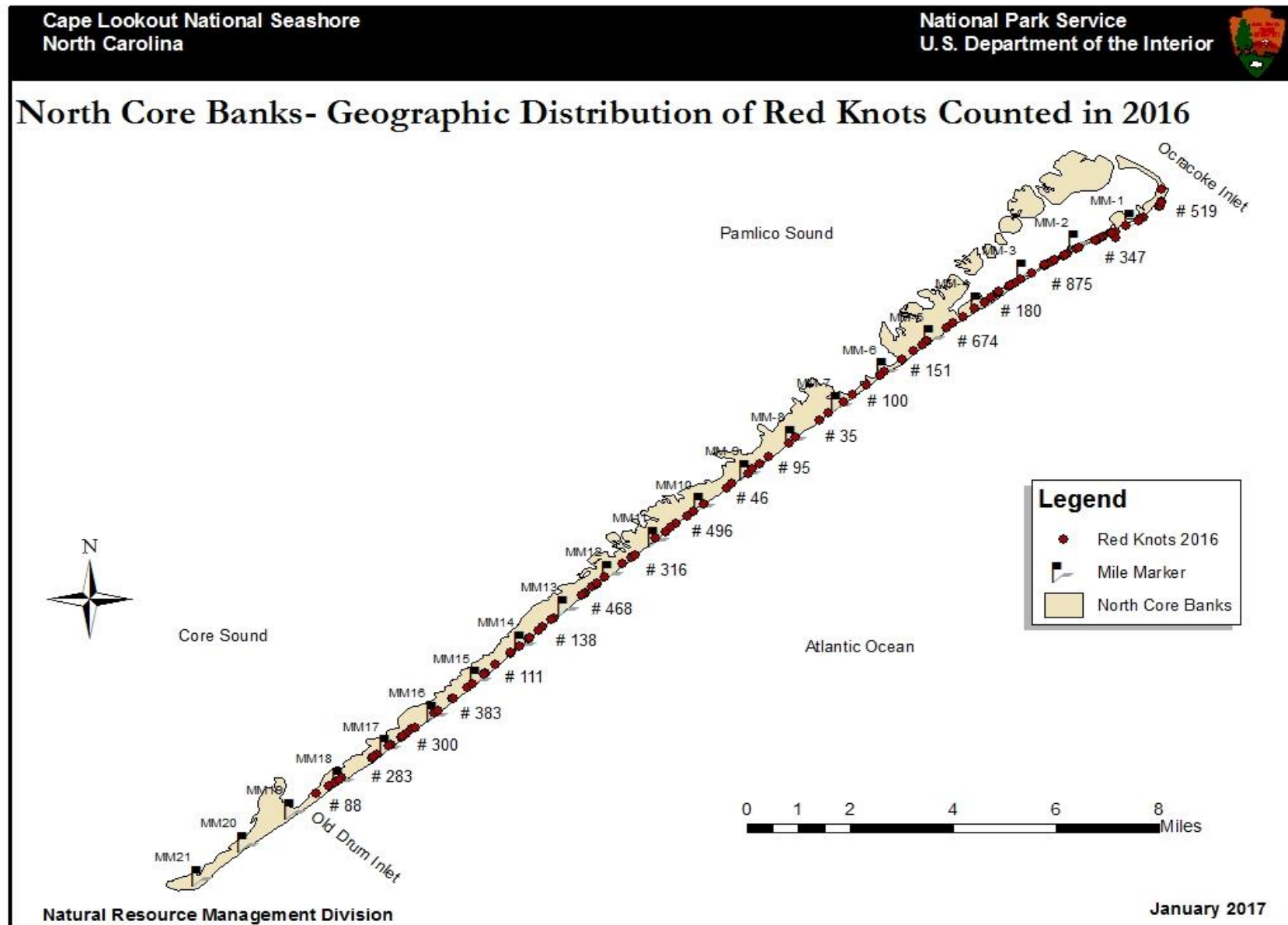


Figure 3. Geographic Distribution of Red Knots Counted on South Core Banks with Total Counts per Mile Section (# 4) in 2016.

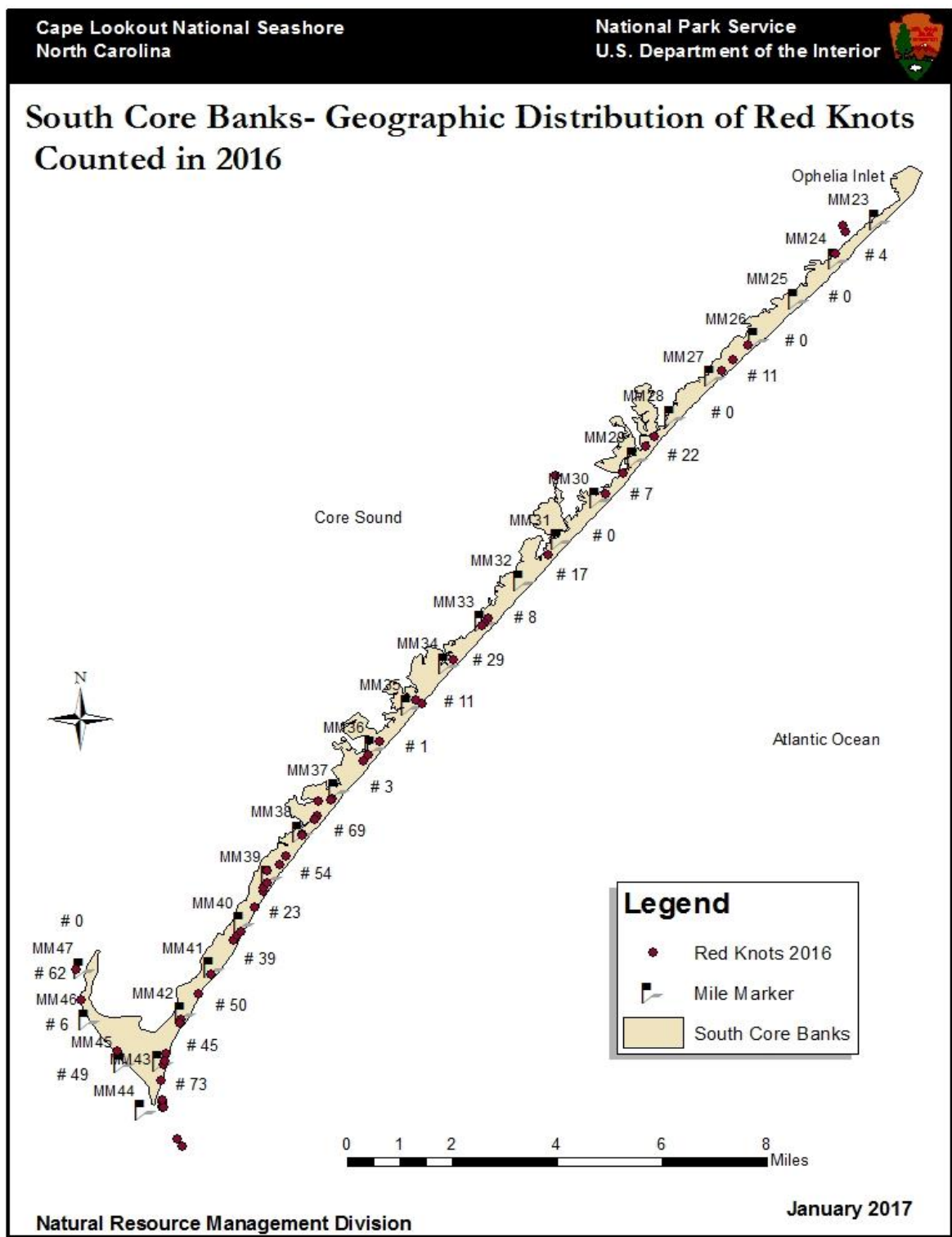
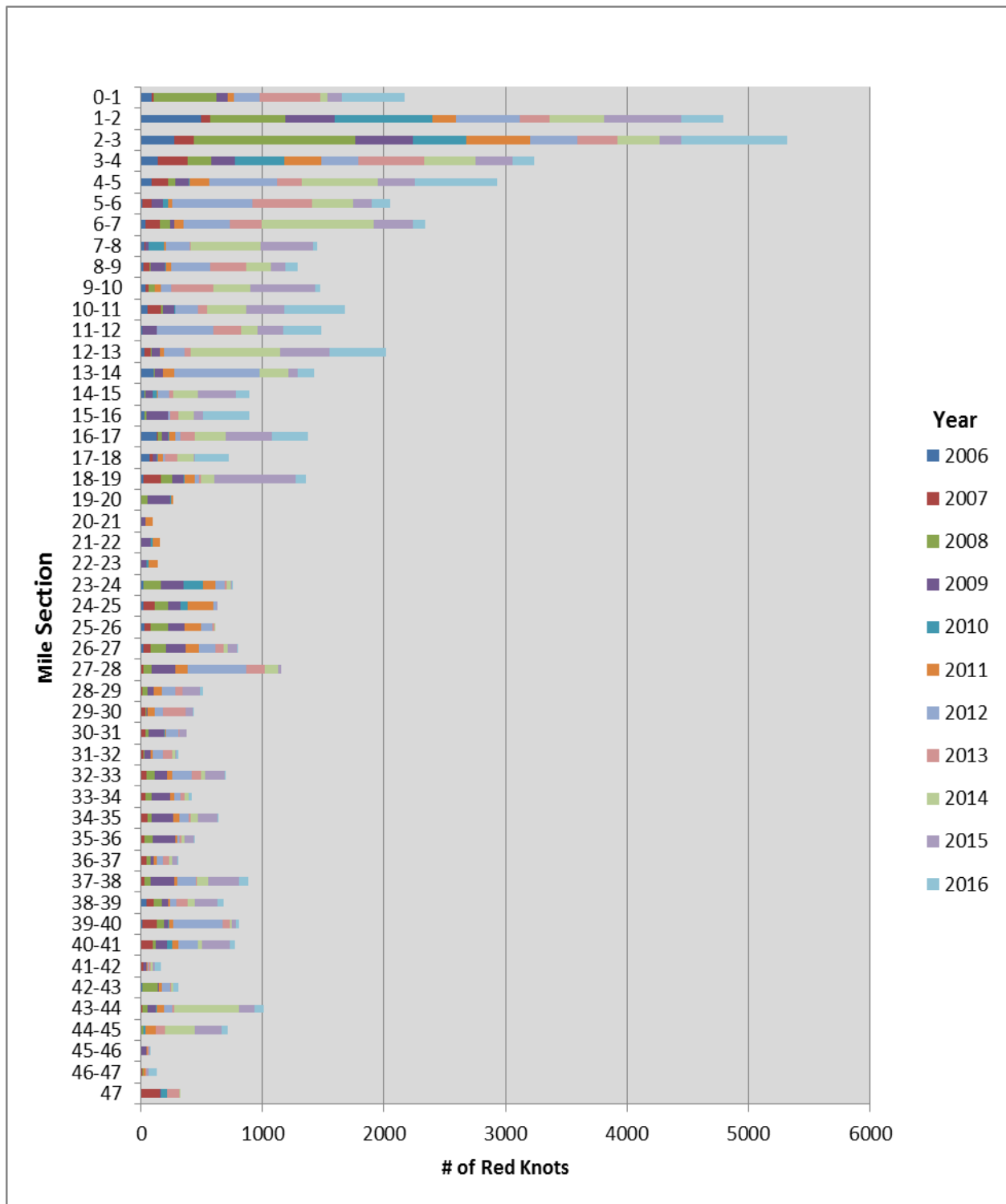


Figure 4. The Number of Red Knots by Mile Section from 2006 to 2016.



## Appendix 1

### RED KNOT (*Calidris canutus*) SURVEY DATA SHEET Cape Lookout National Seashore

Name of Observer: \_\_\_\_\_

Date \_\_\_\_\_ Island \_\_\_\_\_ Start Time \_\_\_\_\_ End Time \_\_\_\_\_

# of REKN	Mile	Latitude (decimal degrees)	Longitude (decimal degrees)	Human Disturbance	Tide	Accuracy

Human disturbance: During this census, shorebirds were:

A=undisturbed, B=disturbed 1-2 times, C=3-4 times, D=5-10 times, E=>10 times, X= unknown

TIDE (coastal sites): 1=high, 2=near high/RISING, 3=near high/ FALLING, 4=half/RISING,5=half/FALLING, 6=near low/RISING, 7=near low/FALLING, 8=LOW, 9=unknown.

ACCURACY: Please indicate in each block whether your count is:

\* a true count, \*\* an extrapolated estimate, or circle a "guestimate"



Appendix 2. Red Knot Count Data from 2006 to 2016 by Mile Section.

Mile	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Sum	Average
47	0	158	0	4	48	0	7	97	3	0	0	317	29
46-47	0	14	1	0	0	24	1	2	0	23	62	127	12
45-46	0	0	0	48	0	4	3	3	0	15	6	79	7
44-45	0	5	10	0	20	82	2	77	248	218	49	711	65
43-44	0	9	48	65	4	61	65	20	536	127	73	1008	92
42-43	14	0	127	8	0	23	65	14	10	0	45	306	28
41-42	0	19	0	26	0	8	8	21	15	12	50	159	14
40-41	0	94	23	96	42	52	157	8	27	235	39	773	70
39-40	11	122	55	31	12	31	407	59	23	33	23	807	73
38-39	47	59	68	47	0	22	51	93	57	181	54	679	62
37-38	0	25	55	195	0	22	150	16	92	255	69	879	80
36-37	0	44	36	26	0	23	54	46	31	39	3	302	27
35-36	4	25	64	187	0	19	19	18	25	76	1	438	40
34-35	0	50	39	172	0	57	72	18	59	162	11	640	58
33-34	5	29	51	150	0	36	57	27	36	0	29	420	38
32-33	0	45	63	109	0	42	158	79	32	156	8	692	63
31-32	0	20	10	51	0	16	84	79	25	8	17	310	28
30-31	0	32	30	128	7	9	105	5	0	62	0	378	34
29-30	0	40	2	14	0	52	71	183	0	63	7	432	39
28-29	0	14	41	52	0	61	114	58	1	143	22	506	46
27-28	0	15	68	200	0	99	481	152	112	23	0	1150	105
26-27	21	53	128	163	0	109	140	66	37	70	11	798	73
25-26	30	45	144	142	0	129	99	13	3	0	0	605	55
24-25	15	96	112	103	58	211	23	3	1	1	0	623	57
23-24	17	6	137	192	155	101	78	15	42	4	4	751	68
22-23				45	16	77						138	46
21-22				81	14	59						154	51
20-21				38	0	53						91	30
19-20			49	190	9	15						263	66
18-19	21	139	98	89	8	84	39	17	109	668	88	1360	124

17-18	72	20	2	33	7	47	18	96	139	7	283	724	66
16-17	126	10	35	50	6	56	42	114	258	379	300	1376	125
15-16	29	0	19	172	1	0	20	67	130	69	383	890	81
14-15	29	0	4	64	35	6	94	29	209	310	111	891	81
13-14	100	0	11	69	0	89	705	2	240	70	138	1424	129
12-13	24	56	5	66	0	35	174	51	737	400	468	2016	183
11-12	7	0	0	119	0	6	463	228	132	213	316	1484	135
10-11	57	102	20	98	3	0	186	74	325	317	496	1678	153
9-10	36	26	47	2	0	48	87	348	305	534	46	1479	134
8-9	18	54	4	123	5	41	328	295	198	125	95	1286	117
7-8	26	6	0	33	121	20	197	4	576	432	35	1450	132
6-7	40	116	83	31	0	81	376	267	920	322	100	2336	212
5-6	8	79	0	92	41	33	666	492	336	151	151	2049	186
4-5	87	132	61	115	1	169	552	207	624	309	674	2931	266
3-4	136	246	196	197	405	307	303	544	422	303	180	3239	294
2-3	273	160	1333	473	437	530	383	334	347	177	875	5322	484
1-2	491	78	618	404	804	196	526	249	443	638	347	4794	436
0-1	89	14	515	93	3	53	211	501	60	115	519	2173	198